CLAIMS

1. A method for analysing the amount of free gas within a pharmaceutical sample, comprising the steps of:
   - providing a sample (14) before an irradiating source (2, 10, 12),
   - irradiating the sample with at least one beam of electromagnetic radiation,
   - detecting radiation emitted from the sample and generating signals corresponding to the amount of free gas in the sample, and,
   - correlating the generated signals to at least one solid state parameter of the sample.

2. Method according to claim 1 wherein the emitted radiation comprises transmitted radiation from the sample.

3. Method according to claim 1 wherein the emitted radiation comprises reflected radiation from the sample.

4. Method according to claim 1 wherein the emitted radiation comprises transmitted radiation as well as reflected radiation from the sample.

5. Method according to any of claims 1-4 wherein the free gas is oxygen.

6. Method according to any of claims 1-4 wherein the free gas is carbon dioxide.

7. Method according to any of claims 1-4 wherein the free gas is water vapour.

8. Method according to any of claims 1-7 comprising the further step of detecting radiation emitted as a function of time wherein the solid state parameter represents the diffusitivity of a gas in a sample.

9. Method according to any of claims 1-7 wherein the solid state parameter represents the hardness of the sample.

10. Method according to any of claims 1-7 wherein the solid state parameter represents the disintegration ability of the sample.

11. Method according to any of claims 1-7 wherein the solid state parameter represents the dissolution ability of the sample.

12. Method according to any of claims 1-7 wherein the solid state parameter represents the flowability of the sample.

13. Method according to any of claims 1-7 wherein the solid state parameter represents the aggregation properties of the sample.

14. Method according to any of claims 1-7 wherein the solid state parameter represents the density of the sample.

15. Method according to any of claims 1-14 wherein the pharmaceutical sample is a solid sample, in particular a tablet, a granule, a capsule, a bulk powder or an equivalent pharmaceutical dose.

16. Method according to claim 15 wherein the pharmaceutical sample is positioned inside a blister of a blister pack.

17. Method according to any of claims 1-16 wherein the radiation irradiating the sample comprises infrared (IR) radiation.

18. Method according to claim 17 wherein the IR radiation is in the near infrared (NIR) radiation.

19. Method according to any of claims 1-16 wherein the radiation has a frequency in the range corresponding to wavelengths of from about 700 to about 2100 nm, particularly from 700 to 1300 nm.

20. Method according to any of claims 1-16 wherein the radiation irradiating the sample comprises visible light.

21. Method according to any of claims 1-16 wherein the radiation irradiating the sample comprises UV radiation.

22. Method according to any of claims 1-21 wherein the irradiating source is represented by at least one diode laser (2).

23. Method according to claim any of claims 1-21 wherein the radiation is detected by a photo multiplier (16).

24. Method according to any of claims 1-21 wherein the radiation is detected by a photo diode (16).

25. Method according to any of claims 1-24 wherein the analysis is conducted in a manufacturing area at-line.

26. Method according to any of claims 1-24 wherein the analysis is conducted in a manufacturing area on-line.

27. Method according to any of claims 1-24 wherein the analysis is conducted in-line in a manufacturing process vessel.

28. Method according to any of the preceding claims wherein the amount of free gas analysed for a pharmaceutical sample is used as feedback control data in a manufacturing process in order to obtain predetermined physico-mechanical characteristics of the manufactured product.